

A vertical bar on the left side of the page with a gradient from dark red at the top to light grey at the bottom.

The Role of the Enterprise Repository in Enterprise Application Integration

White Paper

The Role of the Enterprise Repository in Enterprise Application Integration

EAI has grown out of a genuine business requirement for system integration.

"...it's all about adapting quickly to changing business requirements"

Not a "Silver Bullet" but a practical and attractive approach to systems integration.

Passive and Active integration

The hub is an integrated set of services combining workflow, messaging and middleware solutions.

The Birth of Enterprise Application Integration

Many of us that have been involved in the software industry for some time might regard Enterprise Application Integration as just another buzz-phrase that has been hyped up by vendors and analysts in order to continue to develop and sell something new to their customers. However, EAI isn't simply another TLA (Three Letter Acronym) – it has been born out of a real business requirement, which is both unusual and good news for the end-user organisation.

Businesses today find themselves faced with a similar challenge to that faced on a regular basis by the likes of athletes and racing car drivers; finding that extra little "something" that will put them out in front - or consigning themselves to the runner-up category. For athletes, that little extra "something" might be fitness, for the racing car driver it might be a choice of tyres. For the business enterprise, it's all about adapting quickly to changing business requirements.

Most IT organisations find themselves poorly positioned to react to such change at an acceptable pace and are constantly searching for ways to improve response times. The larger the organisation, the more the problem is compounded as the number of key applications has increased over the years, leading to a situation where many applications are tied together using bespoke interfaces, with both applications and interfaces written in many different languages. Furthermore, recent times have seen a surge in the number of mergers and acquisitions and IT departments in particular, have been under intense pressure to react quickly to integrate systems. This dire situation is further compounded by the need to deliver new, faster, better systems which often means adopting new technologies or implementing packages from the likes of SAP. IT departments are under siege and are always looking for ways to relieve the strain.

Enterprise Application Integration, whilst not exactly the fabled Silver Bullet, offers IT managers a very attractive proposition both for integrating disparate applications and delivering end-user solutions in complex environments.

Why implement EAI?

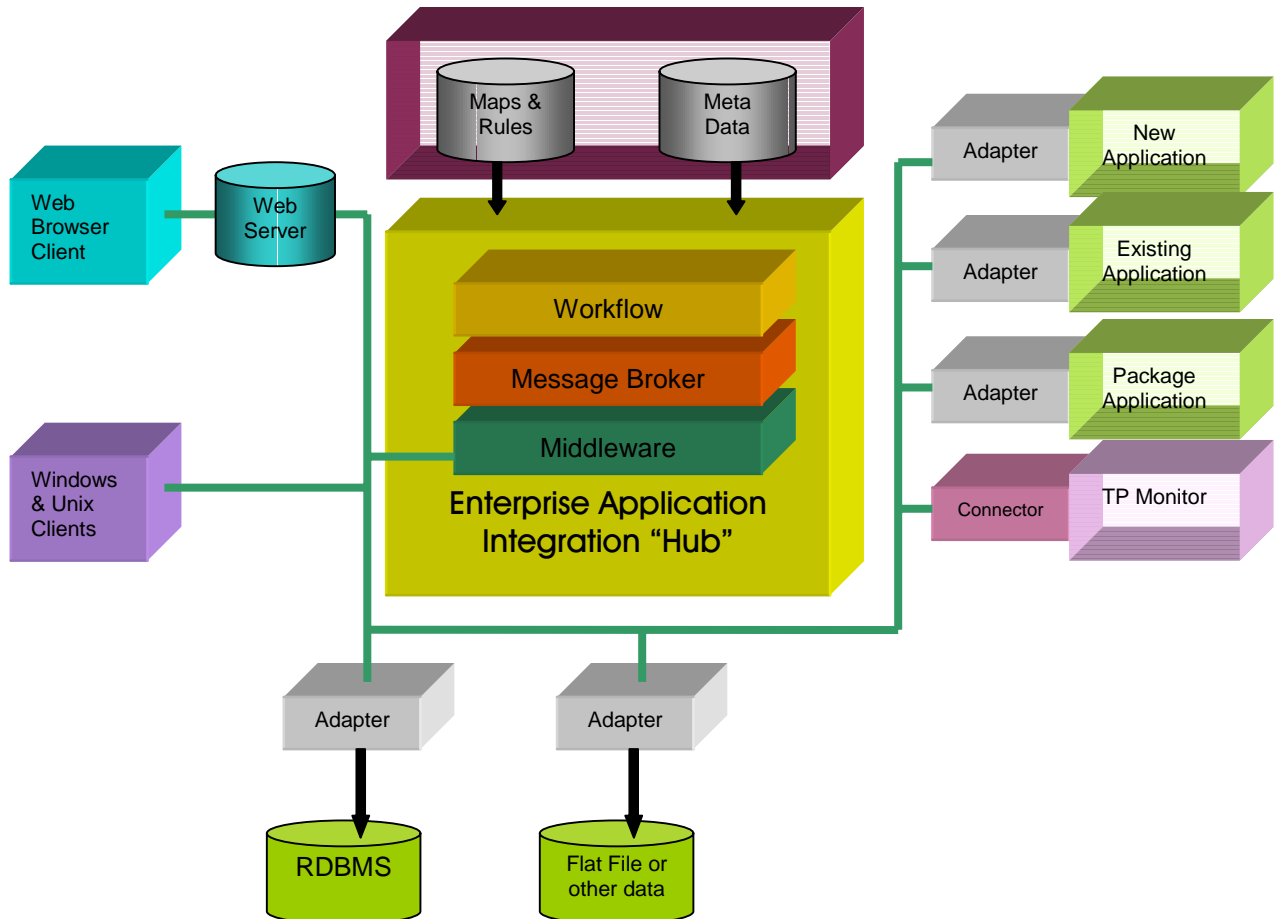
So what does it offer? Essentially two things – passive and active integration of applications across the enterprise. Passive integration has arisen from the need to integrate applications in an automated way, for example B2B connectivity in the e-Business scenario. Active integration on the other hand is more concerned with enabling end-users online access (maybe through a web browser) to integrated back-office systems through one (apparently seamless) front-end.

How does it work?

The fulcrum of Enterprise Application Integration is the "Hub". The hub is an integrated set of services combining workflow, messaging and middleware solutions. The middleware component is supplemented by connectors and adapters – the "plug-ins" that provide the interface capability to the TP systems and applications respectively.

Figure 1. shows a schematic of what a complete Enterprise Application Integration solution may look like.

Figure 1.



One end-user client application to manage multiple, integrated back office applications.

This simplified schematic shows how new and existing applications can be integrated through the adapters plugged into the hub component. Adapters are pieces of interface code acting in real time and are available off-the-shelf for a number of file formats, DBMSs and packages. Through the use of the middleware component, Windows or web browser-based end-user applications may interact with the plugged-in applications in an active way. The major benefit that this scenario brings is that one end-user client application (maybe deployed through an intranet) can be used to manage a number of integrated applications in the back office environment, apparently in a seamless way.

EAI Component Synopsis

Middleware

Middleware provides the message delivery service

Middleware essentially delivers messages across the organisation's network. It is capable of handling high volumes of data in real-time and, together with the adapters and connectors, translates all necessary messages and calls.

Adapters & Connectors

Adapters are key to MOM based EAI solutions and provide the low level translation of calls and message formats

Adapters are key components in a MOM (Message Oriented Middleware) based Enterprise Application Integration solution. They perform the low level translation of call and message formats from that of the middleware to that of the application into which they are plugged. Connectors provide a similar function for TP monitors.

The data transferred to and from the middleware by message and call adapters is sometimes referred to as an "envelope". Two envelopes of data are involved in the message translation process and the software must map the fields in both envelopes to provide a one-to-one or many-to-one mapping of the data. The rules associated with this mapping are of course meta data, and typically this meta data is hard-coded and stored within the adapter itself. This is true both if the adapter is an off-the-shelf item from a vendor, or an in-house program written in, say, Java.

Message Broker

Message Broker provides translation of message content

The Message Broker provides for translation of message content. It must provide support for operations that include

- Re-ordering
- Code Matching
- Re-calculation
- Formatting & Merging
- Field Division or Grouping

All such mapping is stored as meta data, typically in the message broker itself as these tools often provide a GUI for developing maps.

Workflow

Workflow components provide for definition of a rules-based process.

The Workflow component defines the process through which messages are delivered through the Enterprise Application Integration hub. It defines the rules that control user input, call invocation, data manipulation and so on. This component is usually a GUI driven application that supports a diagramming convention. Again, meta data is stored with the tool.

Meta Data and Repository issues

Manage your meta data

Documenting new and existing systems in a comprehensive manner, in one central location has never commanded that much attention from IT departments – but it should. Many organisations are now coming to realise this as they begin to embark on ambitious e-Business and EAI implementation projects. Understanding your existing systems is a pre-requisite to this type of project. Typically, most organisations will have “islands” of information stored in many different tools, with no unifying enterprise model to tie it all together. Many EAI experts and commentators now warmly embrace the idea of a repository, recognising that it is essential to any EAI project’s success.

Enterprise Repositories are the tool of choice

When is a Repository not a Repository?

Many proprietary, closed datastores have the moniker “Repository” associated with them. Usually, these datastores are associated with a particular tool and they provide meta data support for that tool’s functions. In the context of EAI, what is really required is an Enterprise Repository. Such a repository needs to be able to offer some key features:

- Openness (standard APIs and development environment)
- Flexibility (heterogeneous platform capabilities)
- Usability (web-based access, good GUI capabilities)
- Extensibility (definable, extensible information models and functions)
- Versioning (sophisticated configuration management capabilities)
- Performance (optimised datastore, 3-tier architecture)

Such all-encompassing repository technology is thankfully available in the market place.

Document existing systems

Understanding what you’ve already got

Integrating applications demands that you know and understand all of the applications involved. Ideally, an enterprise data model will exist but if not, one needs to be created as the first step to understanding the application portfolio. Some enterprise repositories are available with off-the-shelf support for a range of application development tools and DBMSs, each supplied with its own meta model or Repository Information Model (RIM). In the context of EAI, it would be advantageous if the repository also included models to support one-stop-shop EAI solutions like IBM’s MQSeries, MQIntegrator and MQWorkflow or a range of offerings from other companies like NEON, Microsoft, Active Software, Saga, etc.

Implement meta model support for the enterprise & EAI tools

Populate the meta models

You can’t leverage those things you know nothing about

Don’t underestimate the effort involved

Where such RIMs are available, there generally exists scanner technology that can be supplied by the repository vendor. Using this technology it is possible to begin populating an enterprise wide (meta) data model in the repository. This is the first step – understanding what it is you’ve already got, because you can’t use, or re-use, what you don’t know about. The size of this task shouldn’t be under-estimated – and there are no easy shortcuts. Inevitably, there will be bespoke (and often bizarre) applications hidden away for which the repository vendor has no off-the-shelf solution. Taking advantage of the vendor’s expertise in developing bespoke interfaces to their product is then an obvious route to take.

Get a view of your systems from 30,000 feet up

Getting the Big Picture

Assuming that you've managed to load all of the information pertaining to existing systems into an enterprise repository, the next thing to do is inter-relate it. Hopefully, the repository vendor has been able to supply integrated models to support the bulk of your systems. For those bespoke application areas, the repository tool should provide a modelling function so that you are able to define your own RIMs and integrate them with the supplied models. This integrated Repository Information Model is what gives you the Big Picture – a view from 30,000 feet, so to speak.

Use the meta data asset in the repository to underpin your EAI initiative

The Integration Process

Now that you have a picture of the application portfolio, which potentially includes designs for new applications, you can start the process of integrating them through your chosen EAI hub. If your repository product provides model support for your chosen EAI toolset, all well and good. If it also offers API level integration with the tools themselves, so much the better.

The repository now contains all of the information you need to start the integration exercise. It should be able to feed the GUI mapping applications associated with the message broker and middleware components with information relating to record formats, processing rules and so on. When using the applications to define mappings, the repository should be capable of taking this mapping information and turning it into objects and relationships within the models it holds. This ensures that the maps and rules are not only stored as discrete meta data objects in the repository, but that they are also linked to the definitions of the meta data objects representing the actual source and target items. This ensures a complete and comprehensive documenting of the process. Likewise, the repository should be capable of accepting and storing process definitions from the Workflow component and inter-relating these to the meta data descriptions of the source and target items.

Adapters and connectors should also be discrete items in the RIM, with their algorithmic processes recorded within them (although this isn't so relevant for off-the-shelf adapters) in addition to showing the source and target items.

XML is crucial

Sharing Meta Data

XML is the crucial component in transferring meta data and it is imperative that the repository product is able to process XML (Extensible Mark-up Language) documents and their associated DTDs (Document Type Definitions).

Where's the ROI?

Reaping the Rewards of your Labours

So you've got a great, integrated environment for supporting your EAI initiative – where are the real benefits?

Re-use is the main tangible here. Not just for your EAI initiative, but for any application development or maintenance programme the IT department initiates. So long as the repository was implemented actively (that's to say, it's automatically updated) then it provides a unique and incredibly valuable source of information assets. Development and maintenance efforts and time-scales can be significantly reduced through effective re-use programmes and increased ability to determine the impact of change. Cost savings and competitive edge through reduced time-to-market are increased.

ROCHADE and Enterprise Application Integration

ROCHADE already offers the best available enterprise repository platform for your meta data management requirements. At the time of going to press, the current release, ROCHADE 5.4 , is designed to be the foundation for a new generation of repository technology that is truly open and flexible. Support for emerging standards in data exchange and open development strategies such as XML and Java continues to be added to the product. The 5.4 release sees a fully-featured Java-based web client, support for XML and continuous server support amongst a host of other features. Future releases will see further developments in the use of web-enabled 3-tier client/server architecture, more support for XML, a Java workbench and more. To specifically address the area of Enterprise Application Integration, we are working to build relationships with third-party Enterprise Application Integration vendors and our mutual customers so that we can build the most appropriate solutions for our customers.

About Rochade

The Rochade Division of Viasoft combines repository technology and professional services to deliver business-driven IT (information technology) solutions. Rochade's uniquely open, extensible, and scalable approach to meta data management is key to the successful implementation of a new generation of enterprise management applications.

Headquartered in Bracknell, U.K., the Rochade Division provides sales and services through regional offices in the United States, Europe and the Asia/Pacific region, and a world-wide network of international subsidiaries and distributors. For more information, visit our World Wide Web site, www.rochade.com.

ROCHADE HEADQUARTERS

Powell Duffryn House, London Road
Bracknell, Berks, RG12 2SX
United Kingdom
www.rochade.com
Tel: +44 (0) 1344.404.600
Fax: +44 (0) 1344.427.699

France: Viasoft France SAS
Tel: +33 (0) 1.41.97.85.00
Fax: +33 (0) 1.41.97.85.10
www.viasoft.fr/

Belgium: Viasoft Benelux SA
Tel: +32 (0) 2.711.4480
Fax: +32 (0) 2.711.4490

COUNTRY OFFICES

United States: Viasoft Inc.
Tel: +1.978.692.4300
Fax: +1.978.692.0907

Netherlands: Viasoft Benelux NV
Tel: +31 (0) 76.531.7780
Fax: +31 (0) 76.531.7785

United Kingdom: Viasoft UK Ltd.
Tel: +44 (0) 1344.404.600
Fax: +44 (0) 1344.427.699

Australia: Viasoft Pty Ltd
Tel: +61 (0) 3 9867 5182
Fax: +61 (0) 3 9866 4607

Germany: Viasoft International GmbH
Tel: +49 (0) 89.45716-300
Fax: +49 (0) 89.45716-400
www.viasoft.de

VIASOFT, INC.

3033 N. 44th St., Phoenix, AZ 85018-7296
1.888.Viasoft (United States and Canada)
+1.602.952.0050 (Latin America)
+44 (0) 1344.404.600 (International)
+61 29 460.0411 (Australia)
www.viasoft.com

©2000 Viasoft, Inc. All Rights Reserved. Viasoft® is a registered trademark of Viasoft, Inc. All product names are trademarks or registered trademarks of their respective companies.

EAI001WP052000